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ABSTRACT

Nine schools in a large suburban school district were selected to receive training on the use of information technology. Teachers were trained to use the World Wide Web, create their own Web pages, use Microsoft PowerPoint, and use HyperStudio. Both teachers and a random sample of students were surveyed and interviewed near the end of the year regarding the use of instructional technology in their classrooms. Students seemed to be very aware of the use of technology in their classes. Classroom use of technology varies with grade level grouping (K-2, 3-5, and 6-12). Teacher and student perceptions of how technology is used in the classroom were quite different. The use of computers seems to be greatly affected by location within the school and philosophy of each school, which varied with grade level. (Author/MES)

# Student View of Classroom Technology Use



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**Abstract:** Nine schools in a large suburban school district were selected to receive training on the use of information technology. Teachers were trained to use the World Wide Web, create their own web pages, use Microsoft PowerPoint, and HyperStudio. Both teachers and a random sample of students were surveyed and interviewed near the end of the year regarding the use of instructional technology in their classrooms. Students seemed to be very aware of the use of technology in their classes. Classroom use of technology varies with grade level grouping K-2, 3-5, and 6-12. Teacher and student perceptions of how technology is used in the classroom were quite different. The use of computers seems to be greatly affected by location within the school and philosophy of each school, which varied with grade level.

## Introduction

The Department of Education and Human Development of the State University of New York at Brockport is in its fifth year of a Goals2000 funded project to prepare pre-service teachers to use technology and to increase in-service teacher knowledge and use of technology. The project has involved placing hardware in individual schools, training teachers to use the hardware, networking the schools, setting up a listserv for communication, and having periodic meetings and mini-conferences. SUNY Brockport has been involved in both the in-service teacher training and primarily in the pre-service training of future teachers.

Each year the number of schools involved has increased. The first year, 1995 – 1996 involved the placement of hardware and training of a core of teachers in four schools on the use of the hardware, e-mail, and listserv. The focus during the first year was for each school to develop an operational definition of professional practice school, as it would be implemented at their site. The technology was used as a support communication among schools and SUNY Brockport.

The second year of the project, 1996 – 1997, involved the addition of three more schools and a focus on multimedia applications in the classroom. Teachers in participating schools were trained in the use of HyperStudio and encouraged to use it in their classrooms and with their students. Each of the participating schools continued to use the provided technology both for communication with other members of the project as well as for the development of multimedia presentations. During this second year a core of teachers at participating schools were also introduced to the Internet, the World Wide Web, and Netscape as resources for their teaching. The focus of training on the World Wide Web was on searching and retrieving information to be used by students and teachers.

In an attempt to encourage more use of Internet resources in the K-12 classrooms, the third year of the project, 1997 – 1998, added four more schools, and focused on introducing teachers to a World Wide Web subscription service developed by American Cybercasting, called Educational Structures. Teachers at each of the eleven participating schools were trained on the use of this new tool and encouraged to use it in their

classrooms. Pre-service teachers at SUNY Brockport were also trained on the use of Educational Structures in their classes at the college, so that they could serve as a resource for teachers in the schools to which they were assigned.

The fourth year and fifth years of the project, 1998 – 1999 and 1999 – 2000 continued to focus on helping teachers help their students use presentation graphics, either HyperStudio or PowerPoint and to increase their use of the World Wide Web. Teacher workshops and training sessions centered on learning to use the presentation software, using the WWW as a research medium, and using Microsoft FrontPage to create classroom web pages.

## Evaluation Plan

### Teacher Surveys

In order to evaluate the effectiveness of training in-service and pre-service teachers in the use of Educational Structures, the first author developed a Likert-Type questionnaire for teachers, interviewed a sample of teachers, and analyzed training records. Survey questionnaires focused mainly on the knowledge and use of Educational Structures and the World Wide Web in general. Data from district Technology Integration Teachers indicates what types of training were provided and the number of teachers attending. The Technology Office has also provided information regarding special requests by teachers for help with projects.

In addition, those in attendance evaluated the annual Mini-Conference through the use of Likert-Type survey response forms. The overall conference was evaluated as well as individual sessions.

### Student Surveys

The authors developed three different student surveys, one for grades K – 2, one for grades 3 – 5, and one for grades 6 – 12. These surveys focused on the student's perceptions of how information technology, in general, and the World Wide Web, in particular, had been incorporated into their classes. Ninety-five students from grades K – 12 participated in the survey.

Seven students selected from different grade levels were also interviewed. The interview questions were based on the surveys and allowed the researchers to validate or further expand on the findings. The interviews were conducted one-on-one with randomly chosen students and responses were recorded verbatim.

Surveys in grades K – 2 were administered by their teachers and then returned to the researchers. Surveys were read to the students and they were asked to respond by placing a mark on the "happy face" indicating a "yes" or the "sad face" indicating a 'no." A total of 31 surveys were returned from the K – 2 level teachers to the researchers.

The researchers themselves administered the surveys to students in grades 3 – 5 and grades 6 – 12. Two of the researchers visited each high school, middle school and K – 5 school participating in the survey. Students were randomly chosen from each grade level and completed the surveys with the researchers out of the room.

The researchers randomly selected students to be interviewed from among those students who did not complete the survey. Each of the total of seven students was interviewed by one of the researchers in a one-on-one setting. The interviews lasted between ten and fifteen minutes. Responses were recorded verbatim and tape recorders were not used.

## General Results

The following results are from the teacher surveys, data regarding training supplied by the Technology Integration Teachers and data from SUNY Brockport:

- A total of 256 teachers received training on Educational Structures.
- Approximately 300 students were involved in the project activities.
- 4 Teachers have developed and implemented HyperStudio based projects in their classrooms.
- One high school class and a group of elementary students each produced a HyperStudio presentation.
- In-service training of teachers on the use of technology, especially Internet access and HyperStudio, has rapidly migrated to the students. Students in several schools access and use information and images from the Internet in projects they do for classes.
- Teachers at one high school implemented an interdisciplinary authentic assessment program after receiving training through Goals 2000. They have reported high student achievement.
- The Goals 2000 grant has allowed the establishment of an electronic network within the school district. Schools that would not have been connected for years are already on-line because of equipment provided by the grant.
- Each school in the Goals 2000 project has developed their own model for implementing a Professional Practice School at their site. This bottom-up approach will make success more likely.
- Teachers and students have been accessing information and images from the Internet for use in lessons and class projects. Digital images have become a big part of student projects.
- Teachers are no longer "textbook bound." They are more confident in accessing current information from the Internet.
- All pre-service teachers learn to use e-mail and the listserv to facilitate communication with college faculty and teachers in the schools.
- A total of 195 pre-service elementary teachers received an average of 6 hours of training in the use of the World Wide Web and Educational Structures.
- Two schools in the project developed Student Teacher Manuals to be used with new student teachers.
- Student teachers at all project schools are included in all Goals 2000 activities creating more of a "community of learners."
- There has been a conscious coordination of the training of pre-service teachers at SUNY Brockport with the directions taken by the Goals 2000 project. There is a real sense of cooperation and involvement of all parties. Planning and ideas from the Goals 2000 Steering Committee are used in planning pre-service teacher training activities at SUNY Brockport

## Teacher Use of the World Wide Web

The analysis of surveys returned by teachers involved with the Goals2000 project has indicated a substantial increase in the use of WWW resources in planning for instruction. Each of the teachers, working as part of the Goals2000 grant, has had at least one computer assigned to them. Due to location of rooms, telephone lines, network drops, and other infrastructure problems, not all of these have made it into the classrooms. In situations where the computers could not be located in the teacher's classroom, they were placed in a location within the school that would be convenient for the project teacher. Often, the telephone lines come into the main office and the teacher's room requiring computer placement at that location. As more and more schools are hooked up the wide area network in the district, more computers can be located in teacher classrooms.

Part of the problem in using Educational Structures and the World Wide Web as part of the classroom activities is that in many schools teachers only have a single computer in the classroom, if any. In several cases the computer is not in the classroom at all, but in the teachers room or the school office. The logistical

considerations severely limit full exploration of the power of the WWW and Educational Structures in the classroom.

Two of the most technologically advanced schools in the Greece Central School District are K-5 schools. These schools each have 4 or 5 computers in every classroom and the teachers are experienced in integrating the computer into their teaching. Another problem is that Educational Structures had only been designed with middle and high school students as the target population. American Cybercasting is presently expanding their materials to cover elementary students as well, but at the time the teachers were surveyed, the new materials were not available.

The middle and high schools tend to have a different philosophy regarding the use of technology and generally use a different configuration. The computers in these schools are located in media centers and computer labs and not in the classrooms. Students do use the WWW and Educational Structures in their work, but not in the classroom. As computer usage expands in the district, the middle and high schools will be equipped with at least one computer in each classroom making integration into teaching easier. Until that time, both teachers and students will continue to use computers as tools outside the classroom.

## Teacher Perception of Instructional Technology Use

An analysis of the surveys returned by teachers involved with the Goals2000 project has indicated a substantial increase in the use of WWW resources in planning for instruction. Teachers indicated that they used computers mostly in their planning and preparing for classes. The surveys have provided the following information regarding teacher use of Educational Structures and the World Wide Web in general:

- Teachers responding to the survey used their computers between 1 and 5 hours per week with the World Wide Web.
- These teachers used the World Wide Web for class preparation and not for instruction or as part of work within the classroom.
- Teachers viewed World Wide Web use as a supplement to, not a replacement for, their usual teaching and preparation.

## Student Perception of Instructional Technology Use

Analysis of student surveys and interviews indicated quite a different perception in the way instructional technology was used in their classrooms. It should be noted that student surveys focused on classroom use while teacher surveys focused on teacher use both in and out of the classroom. Differences in the use of technology were identified by grade level, with students in grades K –2 having different perceptions from those in grades 3 – 5 and 6 – 12. The student surveys and interviews produced the following broad perceptions.

Students in grades K – 2 use the computer anywhere from one to five days per week. They typically work alone at the computer and use it for practice, "games," and "typing stories" they have written. Videos and filmstrips are used often in classrooms with this age group, as are overhead projectors.

In grades 3 – 5 students use computers in their classrooms at least once per week. Students at these grade levels tend to work alone or with a partner. Some students use the computer for specialized purposes such as art. Students in this age group occasionally use the Internet. They also only occasionally watch videos or filmstrips. Interestingly students in grades 3 – 5 perceive their teachers as rarely using the overhead projector.

At the grade 6 – 12 level it was apparent that the teachers used the computers in the classroom more than the students. When students have a chance to use computers they work individually to "research, play games, e-mail, and type labs or other homework assignments." Most of the teachers and students used the

Internet in the classroom but it was usually the teacher who was in control. Filmstrips and videos were used occasionally and overhead projectors were used frequently. Teachers at these grade levels often give assignments that require the student to use a computer in some way, but that use must be outside the classroom.

## Conclusions

The Goals2000 project has been successful in increasing the use of information technology both in and out of the classroom. Teachers are using the technology more than ever to prepare for their teaching. Teachers are also encouraging students to use the technology both for their own research and to prepare presentations for class. In a very short period of time teachers involved with the project have become very sophisticated computer users.

As a secondary outcome, teachers and technology integration teachers are looking at the placement of new computer equipment. The elementary classroom configuration with 4 to 5 computers in each classroom needs to be investigated for use at the middle and high schools. The location of computer labs, no matter how numerous, inhibits spontaneous use of information technology by students and prohibits its regular use as part of the instructional process by the teacher.

Students do indeed notice the technology being used in their classrooms regardless of their age and grade level. Many of the teachers actively use technology in their classes and some involve the students in such use. This occurs more frequently at the elementary grade levels than at the middle and high school levels. Students at the elementary level tend to use computers as part of their lesson while use at the middle and high school levels seems to have the teacher using it as a presentation device or model.

A final note. Over the 4 years of Goals2000 projects the Greece Central School District and the State University of New York College at Brockport have worked closely. The result of this affiliation has been the movement of more technology training into the college classroom and more use of pre-service teachers in the public school classrooms. Working closely with the school district has dramatically changed how we train and work with pre-service teachers.

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